

Ice Sheet System Model

Quick Start

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Outline

Example: Steady state ice shelf with square domain

- Model set up
- Model parameterization
- Compute and display model solution

Example: Steady state ice shelf with square domain

- Go to working directory

```
1 $ cd $ISSM_DIR/examples/SquareIceShelf/
```

- Start-up Matlab

```
1 $ matlab
```

- Make Matlab aware of ISSM

```
1 >> addpath ISSM_DIR/bin  
2 >> addpath ISSM_DIR/lib
```

- In Matlab, create empty model structure

```
1 >> md=model;
```

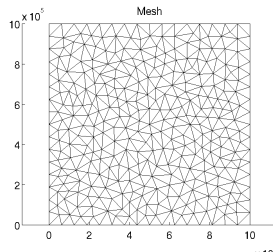
Example: Steady state ice shelf with square domain

- Build mesh over domain with desired resolution (try 100,000 m)

```
1 >> md=triangle(md, 'DomainOutline.exp', 100000);
```

- To plot mesh...

```
1 >> plotmodel(md, 'data', 'mesh');
```



Example: Steady state ice shelf with square domain

- Define glacier type: grounded or ungrounded (default is grounded); typically takes form of...

```
1 >> md=setmask(md, 'floatingicename.exp', 'groundedicename.exp')
```

- For our purposes, set floating ice to 'all'

```
1 >> md=setmask(md, 'all', '');
```

- Call parameterization file (here: use 'Square.par')

```
1 >> md=parameterize(md, 'Square.par');
```

Example: Steady state ice shelf with square domain

- Select ice flow model (here: SSA Shallow-Shelf model; no vertical shear)

```
1 >> md=setflowequation(md, 'SSA', 'all');
```

- Specify platform on which to run the simulation

```
1 >> md.cluster=generic('np',2);
```

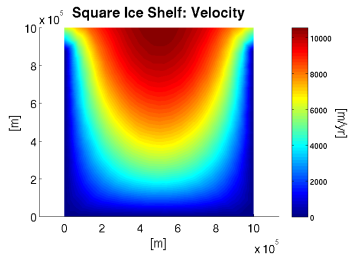
- Compute velocity field for the domain

```
1 >> md=solve(md,StressbalanceSolutionEnum);
```

- Plot the velocity field

```
1 >> plotmodel(md, 'data', md.results.DiagnosticSolution.Vel, ...  
2 'xlabel', '[m]', 'ylabel', '[m]', ...  
3 'title', 'Square Ice Shelf: Velocity');
```

Example: Steady state ice shelf with square domain



- Print the image

```
1 >> print -dpng Velocity.png;
```

Thanks!

